

REMARKS

The only claims pending in this application are Claims 14, 16, and 17, which were rejected in the above-identified Office Action as being obvious in view of a hypothetical combination of the cited Nakamura and Hiyama patents. By this response, however, Claim 14, the sole independent claim, has been amended and is believed to be patentable over those references.

In particular, the claimed invention may be characterized as a method of transferring signal charges, generated by a photoelectric conversion unit, to a floating diffusion region, wherein the transfer is performed twice. First, one part of the signal charges generated by a photoelectric conversion unit is transferred, and second, the remaining part of the signal charges generated by said photoelectric conversion unit is transferred, wherein the floating diffusion region is not reset during the two transfers.

According to the cited Nakamura patent, as shown in Fig. 4, after the total charge carrier is transferred completely (Fig. 4B), the charge carrier is transferred again (Fig. 4D). In contrast to that, according to the present invention, as shown in Fig. 1C, the charge carrier that remains after a first transfer is then transferred. That is, even if during a time period between the first transfer and the second transfer there is no effective quantity of light incident on the photoelectric conversion unit, the second transfer of charge carrier is performed to suppress undesirable residual charge carrier.

Referring now to the cited Nakamura patent, as shown in Fig. 4C thereof, even if the charge carrier exists in a detection node 33 (corresponding to a charge-voltage conversion unit of the present invention), before reading a signal into a signal line, reset is performed. In contrast to that, according to the present invention, in the period between the first and second transfer of the signal charge, no reset of the floating gate is performed.

Accordingly, it is believed that Claim 14, as now presented is patentable over the prior art which does not disclose the above-characterized feature of twice transferring the charge carrier without reset of the floating gate region according to the present invention. For these reasons, the issuance of a Notice of Allowance is solicited.

Applicants' undersigned attorney may be reached in our New York office by telephone at (212) 218-2100. All correspondence should continue to be directed to our address given below.

Respectfully submitted,

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